

Sebastien, Joe, Shri – Visit June 2003

Sebastien – June 2nd-24th, 2003

Joe – 16/17 June 2003

Shri – 16/17 June 2003

NASA LWS work on “Dynamic Inner Magnetospheric Energetic Particle Data and Model Synthesis”

Sunday, June 22, 2003

Current Status of project

1. LANL GEO and GPS data has been extensively cross-calibrated by efforts of Sebastien and Tom. Equivalent energy channels are now available for GPS ns 18, 24, 28 and 33, and all LANL CPA/SOPA have been inter-calibrated. Both GPS and GEO have been “bootstrapped” to CRRES MEA measurements during overlapping periods.
2. Salamambo code has been re-written and is now very stable. At this point it includes all known physics apart from Chorus energy /pitch angle diffusion.
3. Salamambo and all input data required has been tightly integrated at LANL using existing PAPCO modules and a new SALAMMBO module to allow easy control of modeling runs and plotting of output. Current inputs are LANL GEO, GPS , HEO (un-calibrated, prelim L), SAMPEX (un-calibrated, prelim) and OMNI data. The UNILIB library has been integrated into IDL and is used to calculate consistent geomagnetic coordinates for all spacecraft in the study.
4. Preliminary results using LANL GEO, GPS and HEO will be shown at the 2003 GEM Snowmass meeting and at ISEC 2003 in Toulouse.

To do List, Agreements, Short Summary of meeting @ LANL, 16/17 June 2003

Modeling: (Sebastien, Reiner)

1. Set up equivalent SALAMMBO/PAPCO/UNILB environment at LANL and ONERA.
2. Model coefficients need to be calculated for a high resolution version of the code. Current code grid is 25 L bins, 25 energies, 25 pitch angles. Proposed is an update to 50L by 25 energies by 2 degree pitch angle bins, needed for comparison with low altitude spacecraft.
3. Inclusion of chorus wave effects -> use energy and pitch angle diffusion coeff's calculated by Summers / Thorne / Horne.

4. Continued integration and addition of more input/output data. Highest priority here is inclusion of POLAR HISTe, and GEO ESP, followed by SCATHA. Further data will eventually include NOAA TIROS, CRRES, SAC-C, AMPTE and AKEBONO.
5. Inclusion of any data will require and depend on inter-calibrations (Sebastien's method).
6. Inclusion of data will be subjected to "bad data" masks on the basis of Solar Proton events using GOES data; and saturation intervals

HEO / Scatha data: (Joe, Reiner, Sebastien)

1. Preliminary HEO data has been ingested into the SALAMMMBO / PAPCO system but needs further update. A full set of HEO 1 (from 1994) and HEO 3 (from 12/97) data is to be provided.
2. 15 sec data resolution, and high resolution magnetic coordinates only. Agreement is to use L*, MLT and B/Bo calculated using the Olson Pfitzer 77 model, using the UNILIB library.
3. Data needs to be flagged as far as possible for times of bad data or saturation.
4. RF to assist Mike Redding in setting up the latest UNILIB and IDL interface at Aerospace.
5. SB / JF to check with Art Campbell on availability of latest HEO 3 ephemeris data.
6. Delivery date for HEO data is Sept 03.
7. RF to send Joe a 120 GB external hard-disk for full res SCATHA data, to include 40keV – 4 MeV particle data in study.
8. Joe to send SCATHA "book" to LANL, copy to ONERA

SAMPEX data: (Shri, Reiner)

1. Provision of full 6 sec time resolution data. Initially for the 1997-2000 period.
2. Full flagging of data for bad intervals
3. Study for information of saturation levels to be provided
4. Delivery date is mid-end July 03
5. Mag cords to be computed through PAPCO/UNILB and provided to Shri.

Planned papers / other work: (all)

1. RF to set up web site for project as a central clearing house for info.
2. Paper on Inter-calibration techniques / work (Bourdarie, Cayton, Boscher, Friedel) for either JSR / IEEE / JGR Space Weather
3. Paper on first LANL/GPS/HEO results using code/data ingestion (Bourdarie, Friedel, Fennell), JGR Space Weather
4. Paper on HEO/SAMPEX High/Low study (Fennell & Co, Kanekal, Friedel) / JGR Space Weather